having a small mass which improves the reliability of the apparatus and furnishes reproduceable and accurate measurements. Unlike mercury switch systems, the mass to be shifted with each tilting movement is very small, which improves the sensitivity of the sensor. Unlike in mechanical switches, there is no minimum force or change in inertia associated with the dry reed switches used in accordance with the invention.

By using a lightweight non-magnetizable shielding plate **11**, instead of mounting the heavy permanent magnet directly on the shaft of the buckets, the weight and inertia of the heavy magnet has no influence on the tilting movement, and the mass of the lightweight shielding plate **11** is negligible. Due to the fact that the switch **12** is mounted in a vertical position, the actuation of the switch is effected during the middle of the tilting motion when the buckets pass through an intermediate vertical position. In prior art arrangements, horizontally mounted switches are used which are actuated at the end of each tilting circle, which causes errors due to the bouncing back of the bucket assembly and of the switch actuator, causing multiple switch closures. Since in accordance with the invention, only one switch actuation takes place during each tilting movement, no errors due to bouncing back can take place, and furthermore, bouncing back of the tilting bucket assembly is reduced or prevented by provision of the elastic abutments **14**.

Electrical connections are made at a terminal board **15** so that electrical counters or recording means may be used to monitor the number of tilting motions of bucket assembly **8** and thus determine the total amount of precipitation in a given period of time. By choosing the proper funnel **1** of the precipitation collecting and distributing means, measurements can be obtained in increments of 0.01 inch of precipitation.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of precipitation sensors differing from the types described above.

While the invention has been illustrated and described as embodied in a precipitation sensor having means for collecting precipitation during tilting of buckets, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. Precipitation sensor comprising, in combination, supporting means; precipitation collecting and distribution means having an inlet and an outlet for precipitation; bucket means including first and second buckets secured to each other and mounted on said supporting means for tilting movement together between a first position in which an inlet portion of said first bucket is located under said outlet for accumulating of said precipitation while said second bucket discharges accumulated precipitation, and a second position in which an inlet portion of said second bucket is located under said outlet for accumulating precipitation while said first bucket discharges accumulated precipitation; and counting means operated by said bucket means during each tilting movement, said counting means including magnet means carried by said supporting means, magnetic switch means mounted on said supporting means aligned with said magnet means in a vertical plane, and a non-magnetizable shielding plate secured to said bucket means for angular movement therewith and having a cutout registering with said magnetic switch means and said magnet means in said vertical plane during tilting movement of said bucket means to generate a counting pulse by permitting magnetic flux to flow from said magnet means to said magnetic switch means.

2. Precipitation sensor as defined in claim **1**, and including valve means in said outlet so that precipitation is collected while said valve means is closed and discharged while said valve means is open, and valve actuating means secured to said bucket means for opening said valve means in said first and second positions of said bucket means and for effecting closing of said valve means during tilting movement of said bucket means between said first and second positions.

3. Precipitation sensor as claimed in claim **2** wherein said valve means includes a valve member biassed to move to a closed position; and wherein said actuator means engage and open said valve member in said first and second positions of said bucket means, and release said valve member for movement to said closed position at the beginning of said tilting movement so that said valve member closes said valve means when neither of said inlet portions is located under said outlet.

4. Precipitation sensor as claimed in claim **3** wherein said valve means is a check valve; wherein said valve member is a ball biassed at least by gravity to move to said closed position; and wherein said actuator means is located under said valve member and lifts the same to open said valve means when said bucket means is in said first and second positions.

5. Precipitation sensor as claimed in claim **2** wherein said valve means is a normally closed check valve; wherein said actuator means includes a first actuator secured to said first bucket and a second actuator secured to said second bucket spaced from said first actuator; wherein said first actuator engages and opens said valve means in said first position and said second actuator engages and opens said valve means in said second position; and wherein said valve means is located between said first and second actuators during tilting movement of said bucket means between said first and second positions, and is closed.

6. Precipitation sensor as claimed in claim **5** wherein said valve means has a movable valve member; wherein each of said actuators has an engaging portion moving along a curved path during tilting movement of said bucket means; and wherein each engaging portion is curved at a smaller radius of curvature than the respective path so that only a small surface portion of said valve member is engaged by each engaging portion.